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MONTHLY REPORT
OFFICE OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

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MONTHLY REPORT

OFFICE OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

FOREST EXPERIMENT STATIONS

Washington

During April the experiment station programs for the coming year were reviewed and the programs correlated as far as possible.

Through assistance from the Office of Operation, the services of a translator were secured for a short period which permitted the translation of a number of forest laws relating to taxation and regulation in various European countries. A considerable amount of this work is still necessary, but it does not seem possible to add a translator to our force during the coming fiscal year. A number of men familiar with foreign languages have been asked to translate particular laws which we were unable to complete. There are still a number of forest laws we should like to have translated and it may be necessary to call upon some of the field men for additional help.

To the surprise of everyone, Senator Fletcher's bill providing for $50,000 for an increase in the allotment to the Southern Forest Experiment Station passed the Senate without trouble. The bill now goes to the House and it is rumored that Senator Fletcher is preparing an amendment to the agricultural bill, which has already passed the House, providing for this increase as a rider. Senator McNary of Oregon has also announced his intention of requesting a $100,000 increase for silvical investigations to be attached as a rider in the agricultural appropriation bill to provide for a station in the Pacific Northwest and for the Southern Experiment Station, the bill provided for in Senator Fletcher's measure. The regular House appropriation bill for the Department carries the same appropriation for the coming fiscal year as last year.

Mr. Herman Krauch, from the Southwestern Forest Experiment Station, spent April in Washington working with the Editor upon a manuscript on the "Rate of Growth of Western Yellow Pine on Cut-over Areas." This manuscript is in its final form and is being prepared for publication. Mr. Krauch has also been assisting Mr. Brown in the Office of Forest Measurements in his work on the regional volume table for western yellow pine. Krauch expects to leave for the Southwest some time about the middle of May, depending upon his return from extended leave.

The Section of Forest Measurements has been checking the figures of the southern pine growth study. A number of plots were thrown out after it was found that they were deviating too widely from the general average, necessitating considerable recurving and replotting. Considerable difficulty has developed in this work, due largely to differences in the manner in which the plots were obtained, particularly with reference to stocking. From this it is apparent that our ideas as to what constitutes a normal stand are not fixed when applied to field conditions. The data also show the wisdom of having well trained men familiar with forest conditions and familiar with sample plot work decide upon the plots to be taken and what constitutes normality.

The annual compilation of the fire data obtained in cooperation with the Weeks Law work throughout the eastern States has just been finished.

The Editor's Office

It would perhaps be better to qualify the above title with the word "Research," now that Dr. Merrill is on the job and officiates as a sort of super-editor in the name of Director of Publications. Time was, some six months ago, when editors were scarce in these parts and could hardly avoid being a conspicuous mark for any author's shaft of obloquy. Now that we are getting to be a crowd, it is easier dodging and one can the more courageously beard the irate author in his lair.

Form of Tables

Some improvement is possible in the uniformity of tables appearing in the various manuscripts that come into the Branch. Probably the most fundamental law of table construction that can be stated is that a table should read down as to headings and never across. That is, a main heading should refer never to subheadings to the right or left, but only to subheadings under it. The following is an example that recently came across the editor's desk:

TABLE 1. Effect of brush disposal on number of seedlings present in 1923 per acre, under various methods of treatment.

	Douglas fir				Engelmann spruce				Lim
Year seedlings started	1923	1922	1921	1920 and older	1923	1922	1921	1920 and older	1923
Method	Brush scattered								
Shelterwood									
Selection									
Clear-cut									
Total									
Method	Brush burned								

For brevity only a portion of the table make-up is here given. "Year seedlings started" is the principal offender. If anywhere, this should be above the actual years, not at the left of them, where it seems rather to be meant to refer to "Method" in some way. Another criticism is that the table heading should state more explicitly just what is to be shown, so that the table will be understandable even to one who has not read the text. Beneath that main table heading, the headings in the table should each state explicitly what is to be shown under them, and with such statement all subheadings should agree exactly. This particular table might be recast in a number of ways. One such is as follows:

TABLE 1. Effect of slash disposal on seedlings of various ages and species, under different systems of cutting.

Slash disposal and cutting methods	Number of seedlings per acre present in 1923, by species and year of origin							
	Douglas fir				Engelmann spruce			
	1923	1922	1921	older	1923	1922	1921	older
Brush scattered								
Shelterwood								
Selection								
Clear-cut								
Total								
Brush burned								
Shelterwood								
Selection								

These headings are perhaps more concise than is necessary, but at least they are consistent, read down, and follow fairly well the important rule that headings should be put for headings, and subheadings for subheadings.

On page 3 of the new Douglas fir bulletin #1200 is an example of what happens to a table that is wide and shallow. Here the table has been broken into two pieces and one placed below the other. This is confusing to the reader and makes the table suggest a division or subordination that is not intended. One way to avoid this would have been to run the State and climatic units across the top and the various features of temperature and precipitation down the length of the table. A somewhat deeper table could and would have been run sideways on a page by itself.

Page 19 of the same bulletin shows a table with skyscraper headings. It would seem that the headings over columns 4-6 could about as well have read as follows:

Distribution by percentage of surviving seedlings, by year of germination after fire		
First year	Second to sixth year	Seventh to eleventh year

In this case the percentages of all distances from seed trees, to which columns 7-9 are devoted, would instead be placed in columns 4-6, just below "0-to 5 chains" for each species, as "All distances."

It is generally true that a table with towering column headings like this one, can be considerably and profitably simplified.

DENDROLOGY

List of Swamp Trees for General Land Office

A request was recently received by this office from Division H of the General Land Office for a list of the trees in the United States that grow naturally in swamps. The Northeastern States have 17 swamp trees; the Southern and Southeastern States have 35 such trees, while the Northwestern States have but 4.

A rather novel use is made of this list by the Land Office. Land surveys indicating the classification of certain areas as swamp land appear to be accompanied by field notes indicating the presence of certain species of trees, presumably inhabitants of swamp land. With this list in hand, the Land Office cartographer in charge of this field map work is able to tell whether the trees named by engineers are swamp trees. This possible side-light on the reliability of land classifications made by surveyors is apparently worth while.

A New and Little-known Chinese Fir Tree for Trial

Explorations during 1923 in the high mountains of Yunnan, China, have brought to light a large Balsam Fir (Abies forrestii), together with several as yet unnamed large forms of firs likely to be useful in our southeastern forest region. Small supplies of the seeds of Abies forrestii and of the unnamed forms of firs have been obtained through the Office of Foreign Seed and Plant Introduction. These will be tried out at the Appalachian Forest Experiment Station and at Letchworth Park.

Failure of Chinese Chestnuts

Plantings of 8 different forms of Chinese chestnut and chinquapin seed (1922 crop) at the Appalachian Forest Experiment Station in the spring of 1923, yielded a total of 244 seedlings. In November, 1923, Mr. C. F. Korstian's examination showed them to have made the average height growth of our native chestnut, and all were in fairly good condition. Purposely, no protection was given the seedlings for the winter. On May 1, 1924, Mr. Korstian's examination of this stock showed that none of the seedlings survived the winter, which was an unusually severe one.

This failure appears to indicate three things: (1) that the Yunnan forms of chestnut are not as hardy as our native species; (2) that it may be necessary to protect the seedlings in the seedbed for the first one or

two winters, after which, as often happens with a good many exotic trees planted in this country, they may be expected to grow successfully; and (3) that the Yunnan form of chestnut is too tender within the general range of our native chestnut.

Further trials are to be made of Yunnan chestnuts under winter protection, and of seed, if possible to obtain it, procured from colder sections of China. Yunnan chestnut seed is to be tried also in Florida National Forest and at other points in the Gulf States, to the climate of which these chestnuts may be more nearly suited than they are to the Appalachian region.

Snow Gum Tender at Appalachian Station

The Snow Gum (Eucalyptus coriacea alpina) raised from seed in 1922 at the Appalachian Forest Experiment Station was reported by Mr. Korstian in May, 1924, to have been killed down to the ground. However, it is now sprouting from the roots and doubtless will make vigorous growth this season. It remains to be seen whether in the next few seasons' growth this eucalypt will gain in hardiness sufficiently to withstand the climate of the Southern Appalachians. It is my belief that it will prove too tender.

It will be recalled that in its native habitat in Australia this eucalypt is credited with enduring a temperature of 16 degrees (Fahr.). The average minimum temperature in the region of Asheville, N. C., this winter was 23 degrees (Fahr.), while in January, the coldest month, a minimum of 5 degrees below zero was reached on the 6th. It is evident that the Snow Gum is unable to maintain itself in a climate where the temperature goes below a minimum of about 16 degrees.

APPALACHIAN FOREST EXPERIMENT STATION

Search for a Field Station

As a part of the Station's plan of development by means of substations or "working centers," at least one well equipped field laboratory, where controlled experiments can be conducted outdoors and in, is essential. Various points near Asheville have been considered, and last October a trip was made by Frothingham, in company with Supervisor Rhoades, to the Bent Creek Valley, in the Pisgah National Forest, where several possible sites were inspected. A second trip to Bent Creek was made in May by Frothingham, McCarthy, and Korstian. The point visited was the Bent Creek Valley where it widens out in flat tillable bottomlands within about 200 yards of the entrance to the Forest and the new concrete road from Asheville.

The proposed site is fifteen or twenty minutes auto drive from West Asheville and is on the Forest Service road into Pisgah Forest. It includes a clearing of about five acres now under cultivation. Excellent conditions for studies along a variety of lines, including nursery seedbeds

for germination experiments, are to be found on the area, which appears as nearly ideal for the purpose as could be found. Supervisor Rhoades is favorable to the development of the bottomland and adjacent slopes as an experimental area, and the Station is eagerly awaiting the authorization and assets which will permit a start in building.

A Michigan Visitation

Ten University of Michigan senior and graduate forestry students under the guidance of Professor L. J. Young, reached Asheville, overland, on the twenty-third. With Frothingham and Haasis they visited the Biltmore Estate plantations and saw the thinning sample plots in the establishment of which Professor Young assisted in 1916. Under the lure of a trip to Mount Mitchell the party was impressed by Korstian for planting work and spent two somewhat damp days on the high spruce cut-overs. Later, a house on Davidson River drainage, made available by Supervisor Rhoades, was occupied by the party, and trips were made to the Pink Beds, to the top of Lookingglass Rock, and to the old cuttings at the base of the Rock. At the latter point the party stumbled upon a small plot set out by Frothingham and Young in 1916 and enlarged last year by the Station for an experiment in the release of yellow poplar reproduction.

Planting in the Spruce Type (Fp-3)

Continuing the planting experiments begun last year on a spur of Clingman's Peak, along the Mt. Mitchell motor road, the Station set out seventeen additional chain-square plots of 100 trees each, bringing the total number of plots up to 28. The planting was directed by Korstian, with the help of temporary assistants Reineke and Millar, and was in conjunction with the larger plantings carried on by Supervisor Rhoades. The total planted area now amounts to about 16 acres comprising, in addition to the sample plots, about three acres of Norway spruce set out by Rhoades in 1923 and about ten acres of red spruce set out this year. The bulk of the stock for the larger plantings was obtained from the Forest Service nursery at Gladwin, West Virginia. The species used in this year's sample plots consisted of Japanese red pine, Japanese and European larch, European silver fir, white spruce, red spruce, and Fraser fir. All but the Fraser fir, which was produced in the small nursery in the North Carolina State Park at the top of Mount Mitchell, and the red spruce, raised in the Gladwin nursery, came from the Pennsylvania Department of Forests and Waters.

As a commentary upon the future of these experiments, it is notable that the cooperative weather station at the top of Mount Mitchell recorded a minimum temperature for the past winter of -23° F. The same low temperature was also recorded at Camp Alice, which is at about the same level as the planting. This represents at least 17 degrees lower temperature than the lowest at Asheville during the past winter. With the prevailing high wind velocities and the practical absence of snow for considerable periods, the plantations have had to stand extremely adverse winter conditions. It is not surprising, therefore, that some winter injury has taken place; in fact, the excellent resistance of some of the stock was extremely gratifying. Although no record has yet been made of the

condition of last year's plots, very little loss from heaving has been observed, and the plantings, though they bear the evidence of a hard winter, still look promising. One of the sources of loss was from washing, and this was taken into account this year in the selection of the spots for planting.

In addition to the planting of the cleared area, about two square chains were planted to red spruce under cover of fire cherry and yellow birch. This should afford some winter protection, although it remains to be seen whether the spruce can survive the shade if unthinned. It is probable that release cuttings will be tried later on part of this area.

The working plan for this project, which formerly covered tests of both soft and hardwoods, was revised during the month to include only the tests in the spruce type.

Tree Studies

Progress in the studies of southern white cedar (TS-193) and yellow poplar (TS-375) was made during the month. With the help of Reineke, McCarthy put in a series of yellow poplar seed spots under a stand of small red maple at the proposed field station site in Bent Creek Valley. The seed used was gathered last fall partly by McCarthy and partly by station cooperators and stratified during the winter.

A start on the oak study project (TS-12) was made by McCarthy, who reviewed a previous manuscript by W. D. Sterrett and prepared a preliminary working plan for additional investigations.

Forest Fire Damage (Pf-4)

Field and office work on fire damage occupied much of McCarthy's time during April. With Reineke, he made an examination of three of his four sample plots near Old Fort in the Mount Mitchell division of the Pisgah National Forest. These plots, of about six acres, established in April, 1923, are under observation to determine how long mortality will continue as a result of fire and how accurately fire damage can be predicted shortly after the fire. Approximately 800 trees were tagged in these plots, about half pine and half hardwoods. The area was burned in November, 1922.

Personnel

L. H. Reineke, who has been with us since December, is leaving for training camp May 1. According to his present plans he expects to resume work with the Station about July 1.

FREMONT FOREST EXPERIMENT STATION

April Activities

The early part of the month was devoted by both Roeser and Bates to cleaning up office jobs before entering on the season's field activities. Considerable work was done on mensuration data but the status of the growth studies compilation is not as far advanced as it had been hoped, and a good deal of the compiling will have to be done at odd times during the summer and in connection with current field examinations of the plots involved.

Some time was spent by Bates, in behalf of a committee of the Colorado Springs Chamber of Commerce, in lining up a tree-planting contest for a portion of eastern Colorado. This is to be started among the schools, and will carry substantial cash prizes for the best plantations. Preparation for Forest Protection Week also involved a good deal of detailed work. It is felt, however, that the publicity which has been obtained through the School Leaflet has more than justified the effort from any standpoint.

On the 16th active work at the Station was started. The planting of 2,300 trees of yellow pine and transplanting of an equal number of Douglas fir and Engelmann spruce seedlings from different seed sources, is the largest single activity at this time. There are, however, new tests to be gotten under way for the transpiration study (T-7) and the heat-resistance study (T-2), as well as a large amount of testing of 1923 seed-production crops. Owing in large part to the receipt of the galley-proof for "Forest Types in the Central Rocky Mountains," Bates' time at the Station has been very limited. This was disposed of on the 28th.

May Plans

The activities for May will be very largely a continuation of the field activities mentioned above, which will occupy Roeser for most of the month and demand considerable attention from Bates. In the latter half of the month it is expected that Bates, with someone from the District office, and possibly meeting with Pearson from Flagstaff, will go over the grazing-damage (alleged) situation on the San Juan.

The study of fire weather by means of evaporimeters as in 1923, and with the addition of psychrometers at all stations, is being renewed on May 1. On the basis of certain standards established last year as to evaporation rates for the several stations, and assumed standards as to relative humidity, Supervisors will this year telegraph the information to the Experiment Station when certain degrees of dryness are attained. Such information, combined with earlier reports received by mail, and the usual weather forecasts should permit us to warn the District Forester of any extraordinary conditions appearing to demand special attention, and to some extent to warn the Lake States of approaching dry waves of unusual severity.

LAKE STATES FOREST EXPERIMENT STATION

The month was decidedly a month of preparation for the coming field season.

A comprehensive working plan was prepared for the jack pine yield study to take the place of the preliminary working plan of last fall.

Preliminary working plans were prepared in connection with the proposed fire studies, one dealing with the analysis of fire reports and the other with the relation of weather conditions to the occurrence of forest fires. Pimley, of the Minnesota State Forest Service, has already been started on the collection and analysis of some of these data. A formal cooperative agreement between the Station and the Minnesota State Forest Service will probably be worked out in the course of the next few weeks.

A thorough working plan is now in the process of completion for the study of the reforestation results in the Lake States region.

The field work on jack pine was to have started about the middle of April but on account of the roads being impassable the field work probably will not start until early in May. The jack pine study will start this spring in Wisconsin, in cooperation with the State Forester of Wisconsin. Wilson, of the State Forestry Department of Wisconsin, has been detailed for two months to this study.

Preparations are being made for the meeting of the Advisory Committee. Out of the 13 members, eleven have accepted May 19 and Cloquet as the date and place of the meeting. No replies have yet been received from two members from the Upper Peninsula of Michigan. The personnel of the Advisory Committee is as follows:

Michigan

	Michigan Department of Conservation
Herman Lunden	Michigan Hardwood Manufacturers' Association
Prof. L. J. Young	University of Michigan
Prof. A. K. Chittenden	Michigan Agricultural College
John M. Bush	Upper Peninsula Development Bureau
George A. Newett	Lake Superior Mining Institute

Minnesota

G. M. Conzet	Minnesota Forest Service
Dean W. C. Coffey	Department of Agriculture, University of Minnesota
H. C. Hornby	Northern Pine Manufacturers' Association

Wisconsin

C. L. Harrington ..... Wisconsin Conservation Commission
Dean H. L. Russell ..... Wisconsin Agricultural College
A. L. Osborn ..... Northern Hemlock and Hardwood Manufacturers' Association
D. C. Everest ..... Wisconsin Protective Association

Members at Large

E. E. Parsonage ..... Association of Wood-Using Industries
D. C. Everest ..... American Paper and Pulp Association

Plans have now been completed for a meeting at Cloquet of the County Agents of northeastern Minnesota. Of the two-day conference, a day and an evening will be devoted to the discussion of forest problems of interest to the County Agents of northeastern Minnesota.

The Station took an active part in the observance of Forest Protection Week. A committee was appointed consisting of Mitchell of the Station, Conzet of the State Forest Service, and Hansen of the Cloquet Station. This committee prepared a program and outlined the activities. The Station cooperated to the extent of preparing one article by Mitchell and two radio talks, one delivered by Dean Coffey and the other by Zon of the Station.

Kittredge, in addition to preparing the working plan for his summer field project, at the request of the Assistant Forester of the Branch of Research prepared a memorandum regarding the basis and means of arriving at the figures of growth as published in the Timber Crop Report.

The circular letter of the Forester, outlining as an all-Service project the promotion of forestry by private timber owners, was greeted with delight by the entire staff of the Station. Among the activities along this line during this month may be mentioned the assistance given the F. C. Anderson Lumber Company at Bayport, Minnesota, in securing white pine stock and showing on the ground how to plant it. F. C. Anderson has an area of some 50 acres or more which he wants to plant up to white pine. This year he is setting out one acre but intends to continue planting during the next few years. The Salvation Army has a woodlot of some 53 acres close to St. Paul, which it uses as a fresh air camp for children during the summer. The managers of this camp applied to the Station for advice as to the handling of their woodlot. Most of it is old woods and if the woodlot is to maintain itself the diseased trees must be removed and the woodlot gradually replanted. The Cloquet Station contributed several hundred Norway pine, white pine, and spruce plants. These were planted out in the presence of the officials of the Salvation Army by members of the Society of American Foresters on April 25, the official Arbor Day of the State of Minnesota.

Dean Coffey has appointed a committee consisting of the heads of several of the departments and also the Director of the Forest Experiment Station, with the request that the committee present a report and recommendations on the forestry situation in Minnesota and the part which the University may play in it, with particular emphasis on the reorganization of the teaching of forestry at the University.

Among the personnel changes during the month may be mentioned the resignation of H.J.A.Grossmann, who left the Station on April 17 to take up ranching in Montana. Miss Smith of the Cloquet Station, who was assisting in the office during the winter had to return to Cloquet on April 11. Miss Ethel Northfield, a temporary stenographer-typist, is now taking her place.

The visitors to the Station during this month included Herbert A. Smith of the Washington office; Russell Watson of Ann Arbor; George Banzhaf, forest engineer of Milwaukee; P. T. Coolidge, consulting forester of Bangor, Maine; H. N. Wheeler of District 2, and a number of others.

Addresses during the month:

Professional Men's Club of St. Paul, April 10.
St. Paul Chapter, D.A.R., April 11.
Radio talk, for American Pulp and Paper Association, April 19.
Radio talk, Forest Protection Week, "Keep the Forests Green," April 24.

CLOQUET FOREST EXPERIMENT STATION

The annual report of the Cloquet Station was prepared and submitted to Dean Coffey and the President of the University.

A formal list of the projects to be carried on by the Cloquet Station in cooperation with the Lake States Station will be submitted, together with the investigative program of the Station, later on.

The nursery and planting activities of the Cloquet Station have already started. Over $1,000 worth of stock has been sold to private parties in addition to the stock raised for use by the State Forest Service.

NORTHEASTERN FOREST EXPERIMENT STATION

The most important event of the month was the meeting of the Northeastern Forest Research Council at Amherst on April 3. All of the members were present except Professor Toumey, who was detained by illness. Assistant Forester Clapp was also present as a representative of the Forester and the Secretary. The Council organized by the election of W. R. Brown as chairman, S. T.Dana as secretary, and R. T. Fisher as the third member of the executive committee.

The morning session was devoted to a presentation by various members of the Council of existing forest research activities in the Northeast and proposed plans. Particular attention was paid to the activities of the Harvard Forest, New York State College of Forestry, New York State College of Agriculture at Cornell, Northeastern Forest Experiment Station, and the New Hampshire and Connecticut Agricultural Experiment Stations.

In summarizing the research situation in the Northeast Dana pointed out that the preliminary survey made by the station shows a total of nearly two hundred projects now under way in the region, approximately 30 per cent of which are in the field of forest management. Forest protection comes next, including under this head a considerable number of studies in forest entomology and forest pathology. Forest mensuration comes third with forestation, forest ecology, forest and wood utilization, and forest economics next in order. As to agencies, the forest schools are far in the lead with nearly 41 per cent of the total number of projects. Agricultural colleges and experiment stations come next with 15 per cent of the total, followed by various companies, primarily pulp companies. After these follow in the order named state forestry departments and other state departments, colleges and universities (other than forest schools and agricultural colleges), botanic gardens, and individuals.

Following lunch Dana presented the tentative program of work suggested for the station for the coming year. Practically the entire afternoon was spent in a general discussion of this program, in the consideration of the adequacy with which important forest problems in the Northeast are being covered by existing agencies, and in the discussion of ways and means of making the Council as effective as possible in stimulating and correlating research within the region.

The Council was formally entertained at a supper given by the Massachusetts Agricultural College, at which President Butterfield and Mr. Clapp spoke. Following this, the Council adopted a set of resolutions formulated by a special committee appointed to crystallize the sentiment of the meeting. These resolutions -

Approved of the program proposed by the experiment station for the coming year and urged cooperation by other agencies in carrying it out.

Arranged for further study by individual members of the Council of existing and proposed projects, and authorized the executive committee of the Council on the basis of the recommendations received as a result of this analysis to take such steps as seemed to it wise to bring about a more comprehensive and better coordinated program of work for the region as a whole.

Requested the Secretary to issue through the Forest Service for general distribution to interested agencies a descriptive statement as to projects now under way, and to supplement this by quarterly statements of current developments of interest in the field of forest research.

Urged the Department of Agriculture to request and Congress to provide appropriations to enable the placing of forest entomologists and forest pathologists at the Northeastern Forest Experiment Station.

Urged an immediate survey to determine the possibility of controlling the European pine shoot moth, and the appropriation of a sufficient amount to maintain an adequate isolation strip between New York State and the territory in New England now infested by the gipsy moth.

Urged the state forestry departments to secure as complete and accurate forest fire records as possible.

Urged the state forestry departments or other appropriate state agencies to secure as complete information as possible in regard to the practice of forestry by private owners and to transmit this information to the experiment station for compilation for the entire region.

Authorized the executive committee to handle any matters arising between full meetings of the Council, and requested the committee to arrange for the next meeting of the Council at Petersham, Massachusetts, during the first half of September.

Prior to the report of the resolutions committee, the Council endorsed the McNary-Clarke Bill formulating a National Forest policy, requested the chairman to notify appropriate members of Congress of this endorsement, and urged the members of the Council individually to request support of the bill by their representatives. During the evening the Council was entertained at a musical program and social hour arranged by the ladies of the experiment station.

Considering the fact that the Council is composed of representatives of widely diverse interests, many of whom had never met each other before, it is believed that the first meeting was decidedly successful, and that the Council will prove a decidedly worth while organization. In accordance with the resolutions adopted, a considerable number of letters have been sent by the chairman to the Secretary of Agriculture, the Director of the Budget, and various members of both houses of Congress, urging favorable action on the specific recommendations made by the Council.

Following the meeting of the Council, the program for the station was put into final shape, and forwarded to the Assistant Forester for approval. This program places the major emphasis on spruce growth and yield studies; best methods of cutting for pure and mixed spruce stands, including intensive studies of cut-over areas; development of universal taper and volume tables for coniferous species, including their practical

application; control of spruce budworm, bark beetles, wood borers, larch sawfly, and other insects; intensive analysis of fire statistics; and prediction of periods of fire hazard on the basis of inflammability and weather conditions. Minor projects include a limited amount of work on the handling of burned sprout hardwood lands, on the replacement of chestnut, on the reproduction and growth of hemlock, and on the compilation of information regarding the practice of forestry by private owners. The major projects are confined chiefly to the northern part of the region because of the fact that so little investigative work has as yet been done there, while so much has been done and is now under way in the southern part.

Aside from the Council meeting, the month was largely taken up with routine activities. A. B. Bowman, a senior in the Department of Forestry at Pennsylvania State College, joined the station as a student assistant, and has been assisting Westveld and Meyer on their projects. Some interesting forty-year old plantations of white pine, Scotch pine, and European larch in southeastern Massachusetts were studied by Meyer, who took a number of plots for yield data. For the sandy soil on which the plantations are located, much the best yield is shown by the mixed white and Scotch pine, while the pure Scotch pine shows a surprisingly low yield.

Working plans were prepared for studies at the Massachusetts Agricultural College forest at Mount Toby of hemlock growth and of the comparative development of Scotch pine stock grown from seed from the Baltic provinces and from continental Europe. Plantations covering the latter project were made during the latter part of the month, including also comparative plantings of white and Norway pine.

Westveld spoke on the work of the experiment station at the annual meeting of the New Hampshire Lumbermen's Association, and also attended the meeting of the Hampden County (Massachusetts) Improvement League. Dana gave a talk on the objects, activities, and plans of the station at the annual meeting of the Woodlands Section of the American Paper and Pulp Association in New York.

PRIEST RIVER FOREST EXPERIMENT STATION

The members of the staff at Missoula spent the entire month in the office. Some attention to public requirements and the reviewing of numerous reports by members of the staff consumed much of Weidman's time. The white pine yield study took all of Haig's attention and some of Larsen's. The yield compilations are now approaching completion in the form of assembling the data into a preliminary normal yield table.

Larsen completed his forest type map of District 1, and this is now being made into final form in the Office of Drafting. This map shows in colors, in considerable detail, the main cover types of the District, including white pine, larch-Douglas fir, yellow pine, lodgepole pine, subalpine, and grassland.

A good start was made on the proposed fire bulletin for this region by Gisborne who spent most of the month in compiling weather and fire statistics. Gisborne also prepared a set of instructions for lookouts who are to make observations connected with the study of lightning in relation to forest fires. These instructions are being mimeographed.

Wahlenberg spent most of the month in field work in the vicinity of Savenac Nursery. Sites were reconnoitered for field planting and close to 5,000 transplants were set out in various experiments. In addition to careful grading and pruning of stock, laboratory measurements were taken on a representative number of plants.

At the experiment station Kempff has been engaged chiefly in slash disposal and improvement work. Several days were given to the preparation and placing of a Forest Protection Week exhibit in Priest River. This exhibit featured forest fire research, fire protection, and blister rust control, as related to the experimental forest. Kempff reports very little rain during the month with relative humidity readings as low as 15 per cent at 5.00 p. m. on several occasions.

SOUTHWESTERN FOREST EXPERIMENT STATION

Pearson returned from the Madison conference early in April and has spent the greater part of the month in the office. Krauch went from Madison to Washington where he still remains.

A paper entitled, "Some Conditions for Effective Research," has been prepared by Pearson for the meeting of the Southwestern Division of the American Association for the Advancement of Science to be held in El Paso May 5-7. This paper will be read at a symposium on the status and outlook of scientific workers.

Through the efforts of the experiment station, some thirty elm trees and a few pines and spruces have been planted about Flagstaff homes. Last year a dozen elms and several blue spruce were set out with good results. Anyone who has visited Flagstaff knows that it is a treeless town in the heart of the forest. This is not due entirely to a lack of interest in trees. Trees have been planted but ninety per cent have failed. The people of Flagstaff must learn much the same lessons that had to be learned by the Forest Service in this region in its early attempts at reforestation. Planting shade trees may not be forestry, but a little help in this direction will undoubtedly win friends for the Forest Service.

CALIFORNIA DISTRICT

Both Show and Dunning spent April in the office. One event of some importance was the preparation of a set of growth prediction curves for use in forecasting the yield of reserved trees and trees nonmerchantable at the time of cutting, when the second cut is made on timber sale areas. The great mass of data secured in the study of permanent sample plots

was analyzed by site, species and diameter classes and the final curves show the diameter in 10, 20, etc., years of trees now 4, 6, 8, 10, etc., inches in diameter. These figures used in conjunction with a set of height-diameter curves for each site class enable the prediction of individual tree volumes, and by adding one other factor - stand tables - a good estimate should be possible. Data secured on logging damage in connection with the public requirements study came in handy, as an aid in discounting the stand tables that must be used by men preparing management plans. These tables are obtained by subtracting trees to be cut from a complete tally of the virgin forest and obviously make no allowance for loss in logging, which may be very high. The loss rate after cutting has been studied for nearly fifteen years in the permanent sample plots, and fair data were available. This plan is not to be confused with the usual type of yield tables. For the intermediate cut, which will vary enormously, depending on number and size of trees left after logging, it should be a usable system.

A set of growth predictions in even-aged stands was partially worked up. The figures are particularly needed to extend the range of age classes measured in the field work. More definite information on results will be available later.

Ayres and Show continued to accumulate information, misinformation and guesses from various power companies, associations and individuals in connection with the Economic Study. Some of the alleged scientific methods used by the statisticians of the big and supposedly efficient corporations in predicting future populations are worthy of extended notice.

Kotok and Show gave the final revision to a paper on the climate and fires studies. This effort has been under preparation for several months.

Preparations for beginning active field work were completed. Dunning and Ayres start on the Stanislaus May 1.

Financed by the Office of Management and directed by Research, a two-man volume table party will be put in the field on May 15. The measurements have been badly needed for years and it is gratifying to report this step.

WIND RIVER EXPERIMENT STATION

Hofmann's time was largely spent in the East.

Simson put in a few days on the hydro-electric plant and a large part of the month putting the Station, grounds and shrubbery to rights and generally preparing for the season's work.

A very bad fire period developed late in the month, lasting April 24 to 26 inclusive. The numerous existing fires in the Northwest became uncontrollable and considerable damage was done.

Relative humidity reached a low point of 7 per cent at 4 p. m. April 25 at the Station. Dry air from a local fire assisted in giving this abnormal value. April 25 was the worst day; relative humidity remaining below 30 per cent for 13 hours. The easterly wind was moderate and, though never exceeding force 3, was sufficient to carry live sparks a mile in advance of the main fire. The resultant spot fires were difficult to control.

April 26 Osborne, White and Simson visited a near-by fire running in slash and some valuable data gathered. Though the open area was a furnace and many snags were sowing fire it would not spread in the green timber. Psychrometer readings taken ahead of the fire gave a relative humidity of 12 per cent in the edge of the open area and 35 per cent 200 feet back in the forest.

It was interesting to note that, on turning over the still hot duff, at a depth of one-eighth inch below the charred surface, it was so saturated with moisture that small drops of water were observed filling the interstices. This on a very steep southerly slope. Also the sprouting seeds were apparently uninjured.

Slash burning during the closing hours of a period of this nature affords the very best condition for slash disposal in order to insure natural reproduction. Burning is inadvisable earlier in the period as fires are liable to become uncontrollable.

Foreseeing a close of the period, slash burning was recommended for April 27 and 28. Operators firing on those dates secured very effective burns and a high relative humidity and .10 inch precipitation April 29 held the fires safe until they burned themselves out.

During the period, fire bulletins were broadcast through the courtesy of the Morning Oregonian radio station, Portland, Oregon, and locally by telephone.

SOUTHERN FOREST EXPERIMENT STATION

General

Early in the month Forbes and Hine spent three days in southern Arkansas and northern Louisiana, days full of encouragement for our work. At Crossett they visited the logging operations of the Crossett Lumber Company where, under the direction of a professional forester, the very large holdings of one of the most progressive lumber companies in the South are being cut according to forestry principles. That is, adequate seed trees are being left in mature stands of virgin timber, and in second

growth a substantial portion of the stand is being left for increased growth and harvesting in 10 to 20 years. A thoughtful educational campaign has been organized to combat fires and to acquaint local people with the aims of forestry. A fairly intensive fire protective system is in effect over the greater part of the company's holdings, and standing trees on cut-over lands are safeguarded against slash fires by some removal of the slash. Vigorous efforts are being made by the company to interest the legislature in desirable forestry laws. At Bastrop the local pulp mill is not cutting on its own holdings, so that no forestry practice is to be reported from the woods, but the presence of this mill, and of mills now building or planned in the same general section, is giving a decided impetus to the forestry movement. As a concrete example, it is interesting to note that the product of some recent thinnings on a considerable scale at Urania, which will be later mentioned, has been sold to the Bastrop mill at a slight profit over all costs. The mill price of $5 a cord for pulpwood at Bastrop is in interesting contrast to the $9 price paid for similar pulpwood delivered at the pulp mill at Braithwaite, Louisiana; the latter mill is 50 miles from any pine timber by water, and at least one-third of the price paid is for transportation.

Mimeographed copies of the Investigative Program for 1924 were sent out with letters to about 130 southern lumbermen.

Withdrawal from the secretary's position of the Southern Forestry Congress which he has held for three years, relieves Forbes of the equivalent of some six weeks of work annually. Forbes has been appointed Chairman of the Program and Publicity Committee for the year for the local Department of Agriculture Club.

The Director read a paper on the "Southern Forests and the Pulp and Paper Industry," by Messrs. Rue and Wells of the Madison Laboratory, before the organization meeting of the Southern Section of the American Pulp and Paper Mill Superintendents' Association, held in New Orleans on the 18th. He also took occasion to tell the meeting briefly of our pine and tupelo growth studies. As a member of the Louisiana Forestry Association he participated in several conferences with its officers relative to the proposed new forestry law in Louisiana.

Among our visitors at New Orleans have been Messrs. C. V. Holbrook, R. L. Moore, and J. B. Woods, of various offices of the Long-Bell Lumber Company, the latter of whom reports having collected a considerable volume of current growth data on shortleaf and loblolly pine in Arkansas, which if combined with similar data probably obtainable from W. K. Williams, forester of the Crossett Lumber Company, would make a very valuable addition to our knowledge of current growth; Messrs. John Foley and Starr of the Pennsylvania Railroad; and A. Koroleff, whose investigations of logging methods in relation to forestry practice should be of the greatest interest to the entire forestry profession. Mr. Koroleff visited Mr. Hadley at Bogalusa and was in touch with Mr. Hine at Urania.

Hadley and Hine each spent a day or two in New Orleans. At Urania Hine showed our work to Mr. W. P. Wharton of Massachusetts, who was very much interested in the growth of our southern pines. Hine has been in close touch with the Yale Forest School Camp since March.

Protection

Fire. The vagaries of our southern fire weather are illustrated by Hadley's inability to make the spring burn in the young longleaf at McNeill on three separate occasions.

Hine had better luck, burning two age classes of loblolly without difficulty. He reports: "The burning was complete, but merely removed the litter without killing any trees." The severe injury caused the sapling stand of loblolly by the winter burn has been confirmed by subsequent careful observations. Boys have removed many tags from the youngest age class of longleaf in the burning experiments. On such trees as these which are too small to number with paint, our only recourse would appear to be very careful mapping.

Measurements

The outline of the proposed circular on growth of tupelo was submitted to Washington, and pending its approval Hadley has spent several days on various parts of the circular which are sure to be included.

Hine, in cooperation with the Louisiana Department of Conservation, made more or less complete analyses of 20 seed trees, which were released by logging during the winter of 1899-1900. Many responded the first year following cutting, and others required from one to three years before responding to the release. Complete analysis was made impossible by earlier removal of the tops for cordwood, but Professor H. H. Chapman found that similar trees near-by had made a height growth of from two to six feet in the 24 years of release.

Management

Hadley reported two small burns, totalling a little less than an acre, within our extensive plots on the "200 acres." These were carefully mapped.

Hine reported material changes in the natural reproduction plots in mixed pine and hardwoods. These plots were originally laid out as a brush disposal experiment, and the broadcast fire which swept the greater part of them has been responsible for continued deaths among the reserved trees. In addition, many trees have blown down. Owing to grazing, we are threatened with a Spanish oak thicket. Of chief interest is the statement that "hogs because of the unusually lean year have rooted up many shortleaf pines; they passed up the loblolly." It is very plain that portions of these plots must be fenced if we are to get what we should out of the study. Hine remapped the quadrats on three of the plots, finding but one pine seedling from each of the 1922 and 1923 crops. He has had time to check our conclusions on these plots with reference to the need of seed trees against conditions in surrounding virgin stands, and finds that there is very little advance growth of pine or oak in this region.

Hine supervised a heavy thinning in the loblolly pine in Mr. Hardtner's deer pasture. The actual work was done by the Urania Lumber Company and the Louisiana Department of Conservation. The stand was 23 years old, and some of the trees, inspite of general overstocking, were 14 inches in diameter. One hundred and twenty-six trees were left to the acre. The green wood, shipped to the pulp mill at Bastrop, weighed 5,500 pounds to the cord.

Naval Stores

Mr. R. H. Smith, owner of the slash pine timber at Sampson Lake, sold out during the month to a Mr. Brinson of Starke, but our arrangement continues in spite of the change of ownership. Owing to the high water mentioned last month so many faces were under water at one time that it was thought advisable to miss one streak altogether, and it was not until April 29th that all of the faces could be chipped. In spite of the missed streak, five streaks have been put on the timber to date and it was dipped during the month. A record of dry faces made on the 29th showed that from one to four faces were drying in every experimental group except the shallow chipped timber and the open timber. The deep chipping test had 14 faces drying, or five more than showed signs of injury last fall.

In the longleaf timber no streaks have been missed and there are seven now on the trees. The first dip, made during the month, showed that the narrow chipping, the 1/2" x 1/2" chipping, and the shallow chipping had fallen down and gave a yield slightly less than the last dip in the autumn, while the other groups showed no change, which gave them a relative gain.

A start was made on the laborious job of copying the tree records for the New Orleans office. This is our only insurance against possible destruction of the records in case of fire. Chips from both the slash and the longleaf areas were collected for Miss Gerry at Madison.

Forestation

The equivalent of a week was spent by Hadley on the seedling counts and general care of the Bogalusa seedbeds, and Hadley also made three trips to McNeill to sow and care for the seedbeds retained there for quantity production of planting stock. He spent two days with Mr. Johnson, in charge of the forestry work of the Great Southern Lumber Company, on the various plantations and areas directly seeded by the company.

Hine planted at Urania a few slash pine seedlings received from Hadley. Unfortunately, these had already started growth.

Hine tabulated the results of his measurements and counts to date on the loblolly and shortleaf plantations in the Greeley pasture. These plantations were made in December, 1922, and February, 1923. Survival

is generally good, averaging 90 per cent for the loblolly, all of which was planted in furrows, and from 70 to 84 per cent for the shortleaf, with a 5 per cent advantage in favor of the furrow planting over the planting in mattock holes. The season of planting had no discernible effect on the success of the plantations. Mortality appears to have been largely the result of silting under of small stock, although the plantations suffered somewhat from trampling by cattle.

Miscellaneous

Wyman put some 80 specimens of common plants around Starke in shape for identification and shipped them to Washington. He also mounted 50 duplicates for the New Orleans office, and retains a full set of 80 at Starke. He has 40 or 50 additional specimens awaiting mounting and identification.

Library

Last month there were 895 books and periodicals borrowed from the library, and 134 members of the Service and others consulted the library in person. There were 311 books and articles indexed during the month for the card catalogue.

Manuscript News Notes

Appalachian

The Forests of North Georgia. E. F. McCarthy. (Forest School Yearbook, Georgia School of Forestry.)

Growth of Western Yellow Pine on Cut-over Areas. C. F. Korstian. (Final editing: Journal of Agricultural Research.)

The Trail of the Vanishing Spruce. D. S. Jeffers and C. F. Korstian (from American Forests and Forest Life to Scientific Monthly.)

Lake States

Some of the Research Problems in Forestry in the Lake States Region. R. Zon. (Michigan Alumnus.)

Priest River

Optimum Time for Sowing Western White Pine. W. G. Wahlenberg (Journal Agricultural Research)

Optimum Time for Sowing Western Yellow Pine. W. G. Wahlenberg (Journal Agricultural Research)

Priest River (Cont.)

Weed Eradication. W. G. Wahlenberg. (Journal Agricultural Research).

Amount of Seed to Sow. W. G. Wahlenberg. (American Lumberman and National Nurseryman.)

Influence of Forest Cover on Streamflow. H. T. Gisborne. (Engineering News.)

Weed Eradication. W. G. Wahlenberg. (Progress Report, 1923.)

District 6

Varmlands taxering. Translation of Timber Estimation in Sweden. E. J. Hanzlik. (Journal Forestry ?).

Washington Office

Management Forms for Mc, Mt, etc., to printer.

Fremont

Forest Types in the Central Rocky Mountains as Affected by Soil and Climate. C. G. Bates. (Dept. Bulletin 1233 in galley proof.)

In Print

Lightning Storm Report - Form

Flint, H. R. The appraisal of forest fire damage. Journal of Forestry. February, 1924.

Hanzlik, E. J. Tree classification in Sweden. Journal of Forestry, February, 1924.

Mitchell, J. A. The hole in our forest pocketbook. St. Paul Dispatch.

Hofmann, J. V. Natural Regeneration of Douglas Fir in the Pacific Northwest. Dept. Bulletin 1200.

R. Zon. Woodlot in Rural Organization. Gopher Countryman, April, 1924.

J. Kittredge. Mutual Interests of Foresters and Engineers, Tech. Engineering News. April, 1924.